Text Localization for Unmanned Ground Vehicles

Allan Richard Kirchhoff

Thesis submitted to the faculty of Virginia Polytechnic Institute and State University in partial fulfillment of the requirements for the degree of

Master of Science in Mechanical Engineering

Alfred L. Wicks, Chair

John P. Bird

Devi Parikh

June 20, 2014

Blacksburg, VA

Draft 09/01/2009

(Questions? Concerns? Contact Gail McMillan, Director of the Digital Library and Archives at Virginia Tech's University Libraries: gailmac@vt.edu)

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Virginia Tech ETD Fair Use Analysis Results

This is not a replacement for professional legal advice but an effort to assist you in making a sound decision.

Name: Allan Kirchhoff

Description of item under review for fair use: The Velodyne High Definition LiDAR (HDL) Grabber. PCL

Report generated on: 09-21-2014 at : 11:02:03

Based on the information you provided:

Factor 1

Your consideration of the purpose and character of your use of the copyright work weighs: *in favor of fair use*

Factor 2

Your consideration of the nature of the copyrighted work you used weighs: *in favor of fair use*

Factor 3

Your consideration of the amount and substantiality of your use of the copyrighted work weighs: *in favor of fair use*

Factor 4

Your consideration of the effect or potential effect on the market after your use of the copyrighted work weighs: *in favor of fair use*

Based on the information you provided, your use of the copyrighted work weighs: *in favor of fair use*

Draft 09/01/2009

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Virginia Tech ETD Fair Use Analysis Results

This is not a replacement for professional legal advice but an effort to assist you in making a sound decision.

Name: Allan Kirchhoff

Description of item under review for fair use: Introduction to IBM data processing systems. Washington: [U.S. G.P.O.], 1966.

Report generated on: 09-21-2014 at : 11:03:15

Based on the information you provided:

Factor 1

Your consideration of the purpose and character of your use of the copyright work weighs: *in favor of fair use*

Factor 2

Your consideration of the nature of the copyrighted work you used weighs: *in favor of fair use*

Factor 3

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Factor 4

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Draft 09/01/2009

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Virginia Tech ETD Fair Use Analysis Results

This is not a replacement for professional legal advice but an effort to assist you in making a sound decision.

Name: Allan Kirchhoff

Description of item under review for fair use: Liu, Qifeng. Stroke Filter For Text Localization In Video Images, 2014

Report generated on: 09-21-2014 at : 11:03:43

Based on the information you provided:

Factor 1

Your consideration of the purpose and character of your use of the copyright work weighs: *in favor of fair use*

Factor 2

Your consideration of the nature of the copyrighted work you used weighs: *in favor of fair use*

Factor 3

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Factor 4

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Draft 09/01/2009

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Virginia Tech ETD Fair Use Analysis Results

This is not a replacement for professional legal advice but an effort to assist you in making a sound decision.

Name: Allan Kirchhoff

Description of item under review for fair use: Smith, Ryan. "An Overview of the Tesseract OCR Engine"

Report generated on: 09-21-2014 at : 11:04:12

Based on the information you provided:

Factor 1

Your consideration of the purpose and character of your use of the copyright work weighs: *in favor of fair use*

Factor 2

Your consideration of the nature of the copyrighted work you used weighs: *in favor of fair use*

Factor 3

Your consideration of the amount and substantiality of your use of the copyrighted work weighs: *in favor of fair use*

Factor 4

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Draft 09/01/2009

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Virginia Tech ETD Fair Use Analysis Results

This is not a replacement for professional legal advice but an effort to assist you in making a sound decision.

Name: Allan Kirchhoff

Description of item under review for fair use: Bourlard, Hervé. "Text detection and recognition in images and video frames." Pattern Recognition: 595-608

Report generated on: 09-21-2014 at : 11:04:53

Based on the information you provided:

Factor 1

Your consideration of the purpose and character of your use of the copyright work weighs: *in favor of fair use*

Factor 2

Your consideration of the nature of the copyrighted work you used weighs: *in favor of fair use*

Factor 3

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Name: Allan Kirchhoff

Description of item under review for fair use: Wang, Wei. "Car License Plate Detection Based on MSER." IEEE

Report generated on: 09-21-2014 at : 11:05:13

Based on the information you provided:

Factor 1

Your consideration of the purpose and character of your use of the copyright work weighs: *in favor of fair use*

Factor 2

Your consideration of the nature of the copyrighted work you used weighs: *in favor of fair use*

Factor 3

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Draft 09/01/2009

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Virginia Tech ETD Fair Use Analysis Results

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Name: Allan Kirchhoff

Description of item under review for fair use: Chen, Huizhong. "ROBUST TEXT DETECTION IN NATURAL IMAGES WITH EDGE-ENHANCED MAXIMALLY STABLE EXTREMAL REGIONS." Department of Electrical Engineering, Stanford University

Report generated on: 09-21-2014 at : 11:05:37

Based on the information you provided:

Factor 1

Your consideration of the purpose and character of your use of the copyright work weighs: *in favor of fair use*

Factor 2

Your consideration of the nature of the copyrighted work you used weighs: *in favor of fair use*

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Factor 4

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Virginia Tech ETD Fair Use Analysis Results

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Name: Allan Kirchhoff

Description of item under review for fair use: Huang, Chuen-Min. "Apply Adaptive Threshold Operation and Conditional Connected-component to Image Text Recognition." Computer Science and Information Technology 2: 87-94. HRPub.Department of Electrical Engineering, Stanford University

Report generated on: 09-21-2014 at : 11:05:58

Based on the information you provided:

Factor 1

Your consideration of the purpose and character of your use of the copyright work weighs: *in favor of fair use*

Factor 2

Your consideration of the nature of the copyrighted work you used weighs: *in favor of fair use*

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Virginia Tech ETD Fair Use Analysis Results

This is not a replacement for professional legal advice but an effort to assist you in making a sound decision.

Name: Allan Kirchhoff

Description of item under review for fair use: Kim, Joongkyu. "A stroke filter and its application to text localization." Pattern Recognition Letters: 114-122.

Report generated on: 09-21-2014 at : 11:06:25

Based on the information you provided:

Factor 1

Your consideration of the purpose and character of your use of the copyright work weighs: *in favor of fair use*

Factor 2

Your consideration of the nature of the copyrighted work you used weighs: *in favor of fair use*

Factor 3

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Draft 09/01/2009

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Virginia Tech ETD Fair Use Analysis Results

This is not a replacement for professional legal advice but an effort to assist you in making a sound decision.

Name: Allan Kirchhoff

Description of item under review for fair use: Ben-Hur, Asa. "A User's Guide to Support Vector Machines."

Report generated on: 09-21-2014 at : 11:06:53

Based on the information you provided:

Factor 1

Your consideration of the purpose and character of your use of the copyright work weighs: *in favor of fair use*

Factor 2

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Name: Allan Kirchhoff

Description of item under review for fair use: Ofek, Eyal. "Detecting Text in Natural Scenes with Stroke Width Transform."Microsoft Corporation

Report generated on: 09-21-2014 at : 11:07:21

Based on the information you provided:

Factor 1

Your consideration of the purpose and character of your use of the copyright work weighs: *in favor of fair use*

Factor 2

Your consideration of the nature of the copyrighted work you used weighs: *in favor of fair use*

Factor 3

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